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Amendments to the Claims

Please amend the claims as follows:

1) 1-(currently amended)—A method of making optical quality componentsfilms, comprising the steps of:

a)

depositing silica a-buffer layers respectively on a front and back face of first silica film on a silicon wafer by PECVD (Plasma Enhanced Chemical Vapor Deposition) to provide a first structure in resistant to wafer warp during thermal processing by PECVD (Plasma Enhanced Chemical Vapor Deposition);

b) subjecting said first structure to a first thermal treatment to reduce optical absorption and compressive stress in said buffer layers;

c) said first thermal treatment comprising:

i) subjecting said first structure to a temperature that ramps up from a stabilization temperature to a temperature of at least 800°C to decrease compressive stress in said buffer layers from an initial compressive value;

ii) continuing to subject said first structure to said temperature of at least 800°C for a period of at least 30 minutes to further decrease compressive stress in said buffer layers and reduce optical absorption; and

iii) ramping down said temperature to which said first structure is subjected to a final temperature such that said first structure undergoes an elastic deformation wherein the compressive stress in said buffer layers increases linearly to a final compressive value that is less than said initial compressive value;

d) depositing a silica core layer on said buffer layer on said front face of the wafer by PECVD to form a second structure; and

e) subjecting said second structure to a second thermal treatment to reduce optical absorption and tensile stress in said cores layer;

f) said second thermal treatment comprising:

i) subjecting said second structure to a temperature that ramps up to a temperature of at least 600°C to relieve tensile stress in said core layer from an initial tensile value;

ii) continuing to subject said second structure to a temperature of at least 600°C for a period of at least 30 minutes to reduce optical absorption; and

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iii) ramping down said temperature to which said second structure undergoes elastic deformation wherin said tensile stress in said core layer decreases linearly to a final tensile value that is less than said initial tensile value.

~~— subjecting the wafer to a first heat treatment to reduce optical absorption, wafer warp, and compressive stress;~~

~~— depositing a second silica film on the wafer by PECVD; and~~

~~— subsequently subjecting the wafer to a second heat treatment to reduce optical absorption, wafer warp and tensile stress.~~

2.(cancelled)

3.(cancelled)

4.(currently amended) A method as claimed in claim 31, wherein the duration of said first phase of said first structure is maintained at said stabilization temperature for a period of from lies in the range 1.3 to 130 minutes.

5.(currently amended) A method as claimed in claim 31, wherein said first structure is maintained at said stabilization temperature for a period of the duration of said first phase is about 13 minutes.

6.(currently amended) A method as claimed in claim 3, wherin the temperature in said second phase of said first structure is ramped up in said first thermal treatment at a rate lying in the range 1°C/min to 25°C/min..

7.(currently amended) A method as claimed in claim 36, wherein the temperature in said second phase of said first structure in said first thermal treatment is ramped up at 5°C/min.

8.(currently amended) A method as claimed in claim 31, wherein said first predetermined stabilization temperature lies in the range 300°C to 700°C.

9.(currently amended) A method as claimed in claim 71, wherein said first predetermined stabilization temperature is about 400°C.

10.(currently amended) A method as claimed in claim 8, wherein the temperature of said first structure in said fourth phase is ramped down at a rate in the range 1°C/min. to 25°C/min.

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11.(currently amended) A method as claimed in claim 9, wherein the temperature of said first structure in said fourth phase is ramped down at 2.5°C/min.

12.(currently amended) A method as claimed in claim 31, wherein in said first thermal treatment said first structure is maintained at second predetermined temperature that lies in the range of 800°C to 1,300°C for at least 30 minutes.

13.(currently amended) A method as claimed in claim 41, wherein in said first thermal treatment said second predetermined temperature first structure is maintained at a temperature of about 900°C for at least 30 minutes.

14.(currently amended) A method as claimed in claim 1, wherein said first and second heat thermal treatments are carried out in the presence of an inert gas.

15.(currently amended) A method as claimed in claim 4, wherein said inert gas is selected from the group consisting of: nitrogen, N₂, oxygen, O₂, hydrogen, H₂, water vapour, H₂O, argon, Ar, fluorine, F₂, carbon tetrafluoride, CF₄, nitrogen trifluoride, NF₃, and hydrogen peroxide, H₂O₂.

16.(currently amended) A method as claimed in claim 4-14, wherein the flow rate of said inert gas has a constant flow rate is constant.

17.(currently amended) A method as claimed in claim 4-16, wherein the said flow rate of said inert gas lies in the range 1 liter/min. to 100 liters/min.

18.(currently amended) A method as claimed in claim 31, wherein in said the second heat thermal treatment follows a predetermined temperature profile said second structure is maintained at a temperature lying in the range 600 to 1300°C for at least 30 minutes.

19.(currently amended) A method as claimed in claim 4-18, wherein wherein in said second thermal treatment said second structure is maintained at a temperature of 900°C for at least 30 minutes. said second profile follows the same form as said first profile.

20.(currently amended) A method as claimed in claim 10, wherein deposition is carried out in a seven-dimensional space wherein the flow rates of raw material gas, oxidation gas, carrier gas and dopant gas are set at fixed values, the a total deposition pressure is set at a fixed value, a post-deposition thermal treatment is carried out, said post deposition treatment is at a temperature selected from a group consisting of a set of predetermined temperature treatments,

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and the observed FTIR (Fourier Transform Infrared Spectroscopy) characteristics of the resulting product are used to determine select said the post deposition thermal treatment temperature from said group of predetermined treatments.

21.(currently amended) A method as claimed in claim 19, wherein the raw material gas is SiH₄, the oxidation gas N₂O, the carrier gas is N₂, and the dopant gas is PH₃, the SiH₄ flow rate a first independent variable, the SiH₄ flow, is fixed at about 0.20 std litre/min; the N₂O flow rate a second independent variable, the N₂O flow, is fixed at about 6.00 std litre/min; the N₂ flow rate a third independent variable, the N₂ flow, is fixed at about 3.15 std litre/min; the PH₃ flow rate a fourth independent variable, the PH₃ flow, is fixed at about 0.50 std litre/min; the total deposition pressure a fifth independent variable, the total deposition pressure, is fixed at about 2.60 Torr; a sixth independent variable, the post-deposition thermal treatment is varied among the following choices selected from the group consisting of: 30 minutes duration thermal treatment in a nitrogen ambient at 600°C; 30 minutes duration thermal treatment in a nitrogen ambient at 700°C; 30 minutes duration thermal treatment in a nitrogen ambient at 750°C; 30 minutes duration thermal treatment in a nitrogen ambient at 800°C; 30 minutes duration thermal treatment in a nitrogen ambient at 850°C; and 30 minutes duration thermal treatment in a nitrogen ambient at 900°C.

22.(cancelled)

23.(cancelled)

24.(currently amended) A method as claimed in claim 22, wherein a protective layer is deposited on the back face of the buffer layer on the back side of the wafer and a compensating layer is deposited on the front face of the wafer.

25.(currently amended) A method as claimed in claim 24, wherein the protective layer and compensating layer are silicon nitride.

26.(cancelled)

27.(cancelled)

28. (cancelled)

29.(cancelled)

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30.(cancelled)

31.(cancelled)